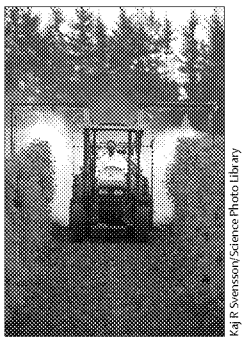
When is a carcinogen not a carcinogen?

A month rarely passes by without something being declared unhealthy or carcinogenic. Often, the WHO International Agency for Research on Cancer (IARC) is at the centre of such pronouncements and is duly rounded on to explain the consequences. IARC, however, is not the only agency with responsibility for determining carcinogenicity of products, compounds, or lifestyles, and many countries have their own authorities to inform national policies. Inevitably, such multiple layers of advice, coupled with competing interests, adds confusion to an emotive landscape, undermining the primary objective of risk assessment—cancer prevention. Recent developments in the long-running disputes about the carcinogenicity of talc and glyphosate are notable examples of how these conflicting perspectives can cause problems.

For decades, a possible link between perineal talc use and ovarian cancer has been debated. In 2010, IARC judged this association to be "possibly carcinogenic to humans" (Group 2B)—a classification one level lower than that given to the consumption of red meat. The American National Toxicology Program has not fully reviewed talc as a possible carcinogen, but the American Cancer Society has stated the risk is probably very small, and because of confounding in the data, more research is needed. In the UK, Ovacome (an ovarian cancer charity) have concluded, "we still do not know what really causes ovarian cancer...it is likely to be a combination of many different...factors, rather than one cause such as talc". Cancer Council Australia has similarly stated that "the evidence is insufficient to conclude that use of talcum powder leads to an increased risk of ovarian cancer". Despite these conclusions, Johnson & Johnson (J&J) is facing more than 1400 legal claims in the USA on behalf of patients with ovarian cancer. J&J has already lost two cases: one in Alabama (Feb 22, 2016) and another in Missouri (May 2, 2016), and has been ordered to pay damages of US$72 million and $55 million, respectively. These rulings raise concerns about the adequacy of the judicial system to arbitrate complex scientific issues, and more importantly, whether carcinogenic risk is being determined on the basis of public perception rather than on the totality of scientific evidence. Moreover, J&J is not the only manufacturer of talc, which raises the question of whether they are being unfairly targeted simply because they have a large market share and are perceived to be a wealthy multinational company willing to pay out to support their commercial interests.

Financial interests might be at the heart of another long-running dispute: whether glyphosate is carcinogenic. Glyphosate is a broad-spectrum herbicide used in more than 750 products. In 2015, IARC classified the chemical to be "probably carcinogenic to humans" (Group 2A), whereas the European Food Safety Authority (EFSA), the US Environmental Protection Agency, and a joint report by the WHO and UN Food and Agriculture Organization have ruled glyphosate is unlikely to be carcingenic to humans. These conflicting differences of opinion create confusion at a crucial juncture. The European Commission's Pesticides Committee was due to make a decision in May, 2016, on whether to relicense glyphosate for a further 10 years. If the agent is not relicensed, farmers, food production, and consumers may suffer, say industry campaigners. On the opposing side, on April 27, 2016, MEPs Against Cancer (a coordinated group of European politicians) said relicensing would be "inappropriate" and "unacceptable" given IARC's evidence. Similarly, many cancer societies, medical groups, and governments across the European Union have also argued against license renewal. How has this confusion come about? First, IARC and EFSA used different methods to assess evidence; second, both organisations had different ways in classifying chemicals containing glyphosate; and, third, scientists claim EFSA's analyses were flawed and biased by studies funded by herbicide manufacturers, whereas others say IARC's assessment procedures included conflicted individuals who could have inappropriately influenced scientific discussions.

These latest disputes regarding carcinogen classification highlight the problem of determining reliable findings when data are equivocal and where there are vested interests. They also highlight the difficulties of translating carcinogenicity research into appropriate health policies and recommendations for risk management. Furthermore, there is an equally clear need for a standardised, internationally agreed methodology for carcinogen assessment, alongside ways of presenting results that are easily understood and accepted by all interested parties. Until these objectives are met, carcinogen definition and regulation will continue to be the poor relation to other cancer preventative measures. ■ *The Lancet Oncology*



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For **IARC's risk assessment of talc** see Policy Watch *Lancet Oncol* 2006; **7:** 295–96

For **IARC's risk assessment of glyphosate** see News *Lancet Oncol* 2015; **16:** 490–91

For **EFSA's risk assessment of glyphosate** see http://www.efsa.europa.eu/sites/default/files/scientific_output/files/main_documents/4302.pdf

For the **UNFAO/WHO joint report on glyphosate** see http://www.who.int/foodsafety/jmprsummary2016.pdf?ua=1